UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

	Application No.	Applicant(s)
Office Action Summary	10/761,280	CLARK, JAMES DAVID
	Examiner	Art Unit	
	Max Shikhman	2624	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on <u>*22 January 2004*</u>.

2a)☐ This action is **FINAL**.   2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-18* is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-18* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *22 January 2004* is/are: a)☐ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☒ All b)☐ Some * c)☐ None of:

      1.☒ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____.

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☒ Notice of References Cited (PTO-892)

2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3)☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date <u>*03/31/2004, 10/24/2006*</u>.

4)☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.

5)☐ Notice of Informal Patent Application

6)☐ Other: _____.

DETAILED ACTION

Claim Objections

1.   Claim 3 is objected to because of the following informalities: Change

"quantising" to --quantizing--.

Claim 6 is objected to because of the following informalities: Change "quantised"

to --quantized--. Appropriate correction is required.

Claim Rejections - 35 USC § 101

2.   35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine,
> manufacture, or composition of matter, or any new and useful improvement
> thereof, may obtain a patent therefor, subject to the conditions and requirements
> of this title.

3.   Claims 15-17 are rejected under 35 U.S.C. 101 because the claimed invention is

directed to non-statutory subject matter. In lines 1 and 2, change *"machine-readable"* to

--computer readable--.

Claim Rejections - 35 USC § 102

4.   The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that

form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a
> foreign country or in public use or on sale in this country, more than one year
> prior to the date of application for patent in the United States.

5.   Claims 1, 10-18, are rejected under 35 U.S.C. 102(b) as being anticipated by

Andrew (PGPUB-DOCUMENT-NUMBER: 20020131084).

() **Regarding Claims 1,10,12,13,15,16,18:**

A computer program product comprising machine-readable program code recorded on a machine-readable recording medium, for controlling the operation of a data processing apparatus on which the program code executes to perform ([0021]-[0023])

A method of compressing image data into a fixed size memory,

the image data being arranged into a plurality of scans of bitstream data, said plurality of scans ordered from a perceptually most significant scan ([0068] more perceptually significant scan) *to a perceptually least significant scan,* ([0068] most perceptually insignificant scan)

each scan having associated therewith an attribute identifying whether the scans are active or inactive (figure 2), *the method comprising the steps of: determining whether said scans are active or inactive;*

([0059] "Each active flag 210 of the memory management table 200 is set to indicate that the corresponding entropy encoded scan stream is active.")

encoding the determined active scans of bitstream data;

([0051] "18 scans are coded by respective entropy encoders 106(1), . . . , 106(19). An example of such a table 200 is shown in FIG. 2." All flags are active in Figure 2. [0059] "Each active flag 210 of the memory management table 200 is set to indicate that the corresponding entropy encoded scan...")

transferring the encoded scan bitstream data to the fixed size memory;

([0037] "106 for entropy encoding the transform coefficients produced by the DCT unit 104, a scan output manager 108 for managing the storing of the transform coefficients in the final output buffer 110 of fixed memory size.")

setting, if the fixed size memory becomes full, the attribute of a currently least significant scan of the active scans to inactive.

([0066] "On the other hand, if the scan output manager 108 determines 350 that the free block register 212 is zero the scan output manager 108 sets 352 the active flag entry in the memory management table 200 of the most perceptually insignificant of the active scan streams to inactive.")

() **Regarding Claims 11, 14, 17**:

Andrew discloses **Claims 11, 14, 17** in [0015]-[0019], [0066], Claims 1, 12. Andrew's Claims 1 and 12 are word-by-word, except setting flags to active and inactive. All flags are initially active. Then Andrew's [0066] "if the scan output manager 108 determines 350 that the free block register 212 is zero the scan output manager 108 sets 352 the active flag entry in the memory management table 200 of the most perceptually insignificant of the active scan streams to inactive.

Also, in Andrew's Claim 16, "memory management table comprises a flag for each said partition and the managing step comprises the sub-steps of: initialising said flags as active; setting the flag in said memory management table indicating that a said freed linked list of the coded least perceptually significant partition is inactive."

Also, in Andrew's [0019], "if the storage is fill and if so freeing a said linked list of

a coded least perceptually significant partition currently stored in said buffer allowing it

to be overwritten by data from a coded more perceptually significant partition."

Andrew's 106 in Figure 1A is an entropy encoder.

Andrew's Claims 48-50 and [0015]-[0019] disclose a computer program.

6.   The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that

form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b),
by another filed in the United States before the invention by the applicant for patent or (2) a
patent granted on an application for patent by another filed in the United States before the
invention by the applicant for patent, except that an international application filed under the treaty
defined in section 351(a) shall have the effects for purposes of this subsection of an application
filed in the United States only if the international application designated the United States and
was published under Article 21(2) of such treaty in the English language.

7.   Claims 1-5,7-10,12,13,15,16,18 are rejected under 35 U.S.C. 102(e) as being

anticipated by Boliek (US-PAT-NO: 6925209). Boliek discloses as follows.

() **Regarding Claims 1,10,12,13,15,16,18**:

A computer program product comprising machine-readable program code recorded on

a machine-readable recording medium, for controlling the operation of a data

processing apparatus on which the program code executes to perform

(Column 4, lines 52-54, "computer selectively activated or reconfigured by a computer

program stored in the computer."

Column 1, lines 65-67, "The bit stream compressed image data..."

Column 30, line 55, "Note that any or all of the components of system 2000 and

associated hardware may be used in the present invention.")

A method of compressing image data into a fixed size memory, the image data

being arranged into a plurality of scans of bitstream data,

(Abstract, "packets". Column 2, line 4, "packets")

said plurality of scans ordered from a perceptually most significant scan to a

perceptually least significant scan,

(Column 1, lines 65-67, "layers".

Column 2, line 4, layers contain packets.

Column 24, lines 21-23, "In JPEG 2000, layers are designed to contain increments to

quality." The first layer is the most significant.)

each scan having associated therewith an attribute identifying whether the scans

are active or inactive,

(Column 25, line 44, "Finally, it also consists of a selection flag. This flag, when set to a

predetermined value (e.g., 1), indicates if the packet is selected in the array for writing

out to a new codestream.")

the method comprising the steps of:

determining whether said scans are active or inactive;

(Column 25, line 44, "This flag, when set to a predetermined value (e.g., 1), indicates if

the packet is selected in the array for writing out to a new codestream." Active can

mean 1 and inactive can mean 0.)

encoding the determined active scans of bitstream data;

(Column 25, line 44, "1 indicates if the packet is selected in the array for writing out to a

new codestream.")

transferring the encoded scan bitstream data

(Column 24, line 60, "a number of packets (e.g., layer, resolution, precinct, tile-

component) are output to the codestream as a complete tile-part.")

to the fixed size memory; (Column 24, line 64, "buffer".)

Column 9, line 40, "In the JPEG2000 standard, data in a compressed codestream can

be stored in one of the five progression orders." Buffer is a fixed-size memory that can

store the codestream.)

setting, if the fixed size memory becomes full, the attribute of a currently least

significant scan of the active scans to inactive.

(Column 25, lines 61-67, "If the total exceeds the number of bytes desired, the packets

in the last layer added are subtracted from the total...packets which have been

subtracted from the total are marked unselected."

Column 9, line 47. "Five progression orders are described in the standard in Table A-16

of the JPEG 2000 standard. They are layer-resolution-component-position progression

(LRCP)...". So, layers can be ordered from the most significant to the least significant.

Column 26, lines 1-5, "In one embodiment, the related markers such as SOT, COD,

PLT are updated according to the request.")

() **Regarding Claim 2:**

A method according to claim 1, wherein the method comprises the step of:

deleting (subtracting), *if the fixed size memory becomes full, the encoded scan bit-*

stream data of the currently least significant scan (last layer).

(Column 25, lines 61-67, "If the total exceeds the number of bytes desired, the packets

in the last layer added are subtracted from the total...")

() **Regarding Claim 3**:

A method according to claim 1, wherein the method comprises the steps of:

transforming the image;

(Column 1, line 34, "After tiling of an image, the tile-components may be decomposed

into different decomposition levels using a wavelet transformation."

Column 5, line 28, "The wavelet transform processing logic 202...")

quantising the image,

(Column 1, line 51, "Through quantization, the information content of a large number of

coefficients is further reduced."

Column 3, line 42, "FIGS. 17 and 18 illustrate quantizers...".)

wherein the quantising step employs bit-shifting operations; and

(column 21, line 31, "If quantization values are bitplanes to truncate..."

FIGS. 17 and 18 show example quantizers (label A . . . Q) for the 3-level 5/3 transform

as the number of coefficient LSBs to truncate or not code.

Truncating is equivalent to bit-shifting. For example, right shift of 10001 gives 1000;

truncating 10001 by deleting LSB, gives 1000.)

partitioning the quantised image into the plurality of scans of bitstream data.

(Abstract, "packets". Column 2, line 4, "packets".)

() **Regarding Claim 4**:

A method according to claim 1, wherein said encoding step comprises the sub-

step entropy encoding the current scan of bitstream data, if the attribute of the current

scan is active;

("attribute" is flag. "current scan" is packet.

Column 1, line 53, "Additional processing by an entropy coder..."

Column 9, line 31, "entropy coder 505".

Column 25, line 44, "This flag, when set to a predetermined value (e.g., 1), indicates if

the packet is selected in the array for writing out to a new codestream." Active can

mean 1 and inactive can mean 0.

"Column 25, lines 61-67, "If the total exceeds the number of bytes desired, the packets

in the last layer added are subtracted from the total...packets which have been

subtracted from the total are marked unselected."

otherwise: proceeding to a next scan of bitstream data.

(Flags are active until a deactivate request is made.)

() *Regarding Claim 5:*

A method as claimed in claim 1, wherein the encoding step comprises the sub-steps accessing a scan of bitstream data for encoding in accordance with a scan map. *(Column 1, line 20, JPEG 2000.*

Column 9, lines 30-33, "context model 503")

() *Regarding Claim 7:*

A method according to claim 1 wherein said scans comprise

DC most-significant scans; DC refinement scans;

(Col 23, line 24, "LL (DC) coefficients".

"DC most-significant scans" are packets that contribute most to quality in LL subband;

DC refinement scans are packets that contribute less to quality in LL subband.

Packets can be ordered by quality: Column 26, line 50, "quality parsing can be performed step by step processing the packets in the structure".)

AC most-significant scans and AC refinement scans.

(AC includes all wavelet subbands except LL: LH_k, HL_k, HH_k.

AC most-significant scans are packets that contribute most to quality.

AC refinement scans are packets that contribute less to quality.)

() *Regarding Claim 8:*

A method according to claim 7 wherein one of said DC most-significant scans is said perceptually most significant scan and one of said AC refinement scans is said perceptually least significant scan.

(Column 18, line 7, "The image data is organized into multiple layers, each of which

comprises coded data that adds visual value to the image (e.g., look sharper, better

defined, better contrast, etc." Layers are made up of packets. most significant scan

would be packets that contribute more to visual quality; least significant scan *would be*

packets that contribute less to visual quality.)

() **Regarding Claim 9:**

A method according to claim 2 wherein said image data comprises a plurality of

color components and said deleting step deletes corresponding encoded scan bit-

stream data of more than one said color components.

(Column 11, line 19 "component". Lines 15-21, "Table 4...The association index shows

...component of the packet. For example, packet[0] is the first packet in the codestream

after the first tile header. It has a length of 589 bytes. RwLxCyPz indicates the packet

belongs to... component y." As in Table 4, packets show components. By deleting all

packets containing selected components, we can delete more than one color

component.

Column 26, line 50, "Similarly, for component parsing... can be performed step by step

processing the packets in the structure.")

Claim Rejections - 35 USC § 103

8.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

9.　　　Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Andrew (PGPUB-DOCUMENT-NUMBER: 20020131084).

() **Regarding Claim 6**:

A method as claimed in claim 1, wherein the image data comprises a plurality of quantised 8x8 blocks of DCT transformed image data,

([0040] "The resultant transformed data is preferably quantized according to the JPEG standard."

[0031] "FIG. 7 shows a Table indicating the partitioning of the 8.times.8 DCT blocks of transform coefficients.")

and wherein the scans comprise at least for each color component of the quantised DCT transformed image data,

([0043] "AC coefficients (coefficients 1-63) for the Y component (component 0). Similarly, Scan 3 comprises the same for the Cr component (component 1). Similarly, Scan 4 comprises the same for the Cb component (component 2).")

two scans for the two least insignificant bitplanes of the group of AC coefficients 1 to 32, and two scans for the two least insignificant bitplanes of the group of AC coefficients 33 to 63.

([0047] *"For the remaining scans, each bit plane is separated into three scans ... one for*

coefficients 1 to 5 and one for the remaining AC coefficients (coefficients 6-63)." Andrew

does not disclose AC coefficients 1 to 32 and 33 to 63.)

Andrew does not disclose expressly scanning AC coefficients 1 to 32 and 33 to

63. At the time of the invention, it would have been obvious to a person of ordinary skill

in the art to scan AC coefficients 1 to 32 and 33 to 63.   Applicant has not disclosed that

scanning AC coefficients 1 to 32 and 33 to 63 provides an advantage, is used for a

particular purpose or solves a stated problem. One of ordinary skill in the art,

furthermore, would have expected Applicant's invention to perform equally well with

either the spacing taught by Andrew or the claimed scan AC coefficients 1 to 32 and 33

to 63, because both scans perform the same function of implementing successive

approximation mode in JPEG.

Therefore, it would have been obvious to one of ordinary skill in this art to modify

Andrew, scan AC coefficients 1 to 32 and 33 to 63 to obtain the invention as specified in

claim 6.

Conclusion

10.   The prior art made of record and not relied upon is considered pertinent to

applicant's disclosure. Wise (PGPUB-DOCUMENT-NUMBER: 20040221143) discloses,

"Multistandard video decoder and decompression system for processing encoded bit

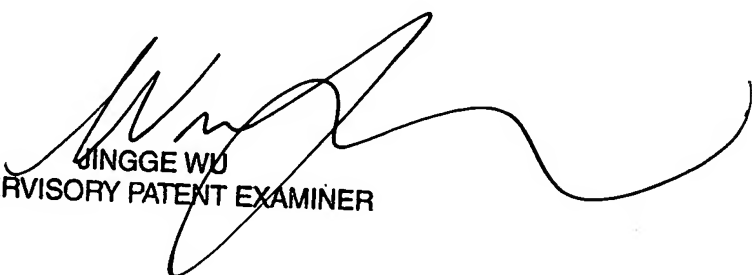streams including a standard-independent stage and methods relating thereto".

11.   Any inquiry concerning this communication or earlier communications from the

examiner should be directed to Max Shikhman whose telephone number is (571) 270-

1669. The examiner can normally be reached on Monday-Friday 7:30AM-5:00PM EST..

       If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, JINGGE WU can be reached on (571) 272-7429. The fax phone number for

the organization where this application or proceeding is assigned is 571-273-8300.

       Information regarding the status of an application may be obtained from the

Patent Application Information Retrieval (PAIR) system. Status information for

published applications may be obtained from either Private PAIR or Public PAIR.

Status information for unpublished applications is available through Private PAIR only.

For more information about the PAIR system, see http://pair-direct.uspto.gov. Should

you have questions on access to the Private PAIR system, contact the Electronic

Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a

USPTO Customer Service Representative or access to the automated information

system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Max Shikhman
6/4/2007

JINGGE WU
SUPERVISORY PATENT EXAMINER